What is claimed is:

1. A method for detecting molecules, in particular peptides, proteins, carbohydrates, glycoproteins, proteoglycans and/or nucleic acids, by means of a metal compound in the presence of at least one at least bifunctional agent, said agent having at least one hydrophobic moiety and at least one reducing moiety.

2. The method as claimed in claim 1, characterized in that the bifunctional agent is a molecule of the general formula X-R.

3. The method as claimed in claim 1 or 2, characterized in that X is the reducing moiety.

4. The method as claimed in any of the preceding claims, characterized in that X is a linear or homo- and/or heterocyclic hydrocarbon.

5. The method as claimed in any of the preceding claims, characterized in that X preferably comprises at least one hydroxyl group, at least one sulfhydryl group, at least one carbonyl group, at least one thiosulfate group and/or at least one unsaturated carbon-carbon bond.

6. The method as claimed in any of the preceding claims, characterized in that X is a molecule having antioxidative properties, for example a vitamin, preferably from the group consisting of vitamin A, vitamin C and/or vitamin E, in particular ascorbic acid.

7. The method as claimed in any of the preceding claims, characterized in that R is the hydrophobic moiety.

8. The method as claimed in any of the preceding claims, characterized in that R is a saturated or at least monounsaturated hydrocarbon, preferably an acyloxy, acyl and/or alkyl radical.

9. The method as claimed in any of the preceding claims, characterized in that R is the acyloxy radical of the general formula $-O-CO-C_nH_{(2n+1)}$, where n = 8-21, preferably n = 11-17, in particular n = 15.

10. The method as claimed in any of the preceding claims, characterized in that the bifunctional agent is ascorbyl palmitate (= palmitoyl ascorbic acid), ascorbyl stearate (= stearoyl ascorbic acid), ascorbyl myristate (myristoyl ascorbic acid) or ascorbyl laurate (lauroyl ascorbic acid).

11. The method as claimed in any of the preceding claims, characterized in that the bifunctional agent is present at a final concentration of from 10^{-5} to 1% (w/v), preferably from 10^{-4} to 0.1% (w/v), in particular 5×10^{-4} to 5×10^{-3} (w/v) and preferably 10^{-3}% (w/v), during detection.

12. The method as claimed in any of the preceding claims, characterized in that the metal compound is a silver compound, preferably silver nitrate.

13. The method as claimed in any of the preceding claims, characterized in that the nucleic acids are DNA or RNA.

14. The method as claimed in any of the preceding claims, characterized in that the molecules are applied onto or into a support for detection.

15. The method as claimed in claim 14, characterized

in that the support is a gel, in particular a polyacrylamide or agarose gel, a membrane, in particular a PVDF or nitrocellulose membrane, and/or a microarray support, in particular a biochip.

16. The method as claimed in any of the preceding claims, characterized in that detection of the molecules, in particular those present on or in the support, comprises at least the following steps: fixing step, at least one washing step, metal compound step, developing step and/or stopping step.

17. The method as claimed in claim 16, characterized in that the bifunctional agent is used in the fixing step and, in particular, is present in a fixing solution.

18. The method as claimed in any of the preceding claims, characterized in that the bifunctional agent is used in an at least partially alcoholic solution, preferably as a component of the fixing solution, said alcohol preferably being ethanol.

19. The method as claimed in any of claims 16 to 18, characterized in that a complexing agent, preferably EDTA and/or EGTA, is used in the developing step and, in particular, is present in a developing solution.

20. The method as claimed in claim 19, characterized in that the developing solution comprises a reducing agent, preferably from the group of aldehydes, in particular formaldehyde, sodium carbonate, the complexing agent and/or sodium thiosulfate.

21. The method as claimed in any of the preceding

claims, characterized in that the detected molecules are characterized, in particular studied mass-spectrometrically, after detection.

22. A kit for detecting molecules, characterized in that it comprises an at least bifunctional agent, said agent having at least one hydrophobic moiety and at least one reducing moiety, preferably in a fixing solution.

23. The kit as claimed in claim 22, further characterized by at least one of the features of claims 2-11 or by addition of a complexing agent in the developing step.

24. The kit as claimed in claim 22 or 23, characterized in that the developing step comprises a complexing agent having the features of claim 19.